

## Georgia Department of Transportation

### Construction Engineering Inspection Training

#### Auxiliary Items—Group 1



# **Table of Contents**

- 150 Traffic Control
- 151 Mobilization
- 152 Field Laboratory Building
- 153 Field Engineer's Office
- 155 Insect Control
- 157 Survey Aids
- 158 Training Program

# **Georgia Department of Transportation Construction Engineering Inspection Training**

## **Auxiliary Items Inspection**

### **Section 150: Traffic Control**

- Traffic Control is established in each contract as a Special Provision and is supplemented by the plans, specifications and Manual on Uniform Traffic Control Devices (MUTCD) and shall be considered the Temporary Traffic Control Plan.
- Temporary Traffic Control Plans shall be submitted by the Contractor to the Department for any work that impedes or interferes with traffic in accordance with Section 150 that is found in the contract. Staging plans are not Traffic Control Plans.
- Activities shall consist of furnishing, installing, maintaining, and removing necessary traffic signs, pedestrian signs, barricades, lights, signals, cones, pavement markings and other traffic control devices and shall include flagging and other means for guidance and protection of vehicular and pedestrian traffic through the Work Zone.
- This Work shall include both maintaining existing devices and installing additional devices as necessary in construction work zones.
- When listed as a pay item in the Proposal, payment will be made at the Lump Sum price bid, which will include all traffic control not paid for separately and will be paid for in accordance with a payment schedule based on percent of the work complete.

## Section 151: Mobilization

Mobilization includes preparatory work, operations, and moving personnel, equipment, supplies, and incidentals to the Project site

Note: Mobilization also includes all other work and operations performed or costs incurred before beginning work on various items on Project site



### *Measurement*

- Mobilization is not measured separately for payment. The cost for mobilization is included in the cost of other items.

# Georgia Department of Transportation Construction Engineering Inspection Training

## Auxiliary Items Inspection

### Section 152: Field Laboratory Building

#### *Field Laboratory Physical Requirements*

Provide a structure approved by the Engineer, including building, trailer, fixed building erected on site, vacated house at approved location, as follows:

- Each laboratory shall house required testing equipment to meet minimum requirements for dimensions, space, and facilities
- Each building or trailer shall be 7 ft (2.1 m) wide and 7 ft (2.1 m) high inside and contain 120 ft<sup>2</sup> (11 m<sup>2</sup>) minimum floor space
- Each unit shall be floored, roofed, and weathertight and have the following:
  - At least one hinged or sliding window on each window having at least 6.5 ft<sup>2</sup> (0.6 m<sup>2</sup>) of openings
  - An entrance door that securely locks
  - A built-in work table with at least two drawers (one lockable)
  - Lighting and ventilation
  - Heating with necessary fuel
  - Potable running water and electric current
  - Sheds and platforms required for special testing equipment
  - Sanitary facilities as required by local State Health Departments
  - Approved fire extinguisher in each building



#### *Asphaltic Concrete Plant Laboratory Requirements*

The asphaltic concrete plant laboratory shall have the following equipment and facilities:

- Equipment with ventilation system that can maintain a temperature between 65°F and 80°F (18°C and 27°C) with windows and doors closed
- Enclosures for procedures where extracting solvent vapors are emitted
- Dry samples under enclosure or inside oven that is vented outside the lab
  - Enclosure must have hood, glass, or other doors capable of enclosing the extracting solvent vapors from ambient air in the lab

- Replacement air provided through an open window or other opening to achieve specified exchange of air
- Ventilation system capable of exchanging air at rate of 100 ft<sup>3</sup>/ft<sup>2</sup>/min (30 m<sup>3</sup>/m<sup>2</sup>/min) over entire open door area of each enclosure

### ***Portland Cement Concrete Plant Laboratory Requirements***

The Portland cement concrete plant laboratory shall have the following equipment and facilities:

- Combined office/workspace measuring 300 ft<sup>2</sup> (28 m<sup>2</sup>)
- Heating and air conditioning equipment capable of maintaining interior temperature of 70°F (21°C)
- Separate office space with space for a desk and two chairs
- A work table at least 2.5 ft (750 mm) wide, 5 ft (1500 mm) long, and 3 ft (900 mm) high to prepare concrete cylinders for testing
- An outside work area of at least 10 ft × 10 ft (3 m × 3 m) consisting of a concrete slab constructed level and true, with light broom finish



Payment: Contractor Unit Price bid for each laboratory

### ***Related Specifications***

<b>Section</b>	<b>Title</b>
400	Hot Mix Asphaltic Concrete Construction
402	Hot Mix Recycled Asphaltic Concrete
	AASHTO TP4
	AASHTO T166
	AASHTO T209
	AASHTO T309
	GDT 125 "Method for Test for Determining Asphalt Content by Ignition"
	NFPA – 10A

# Georgia Department of Transportation Construction Engineering Inspection Training

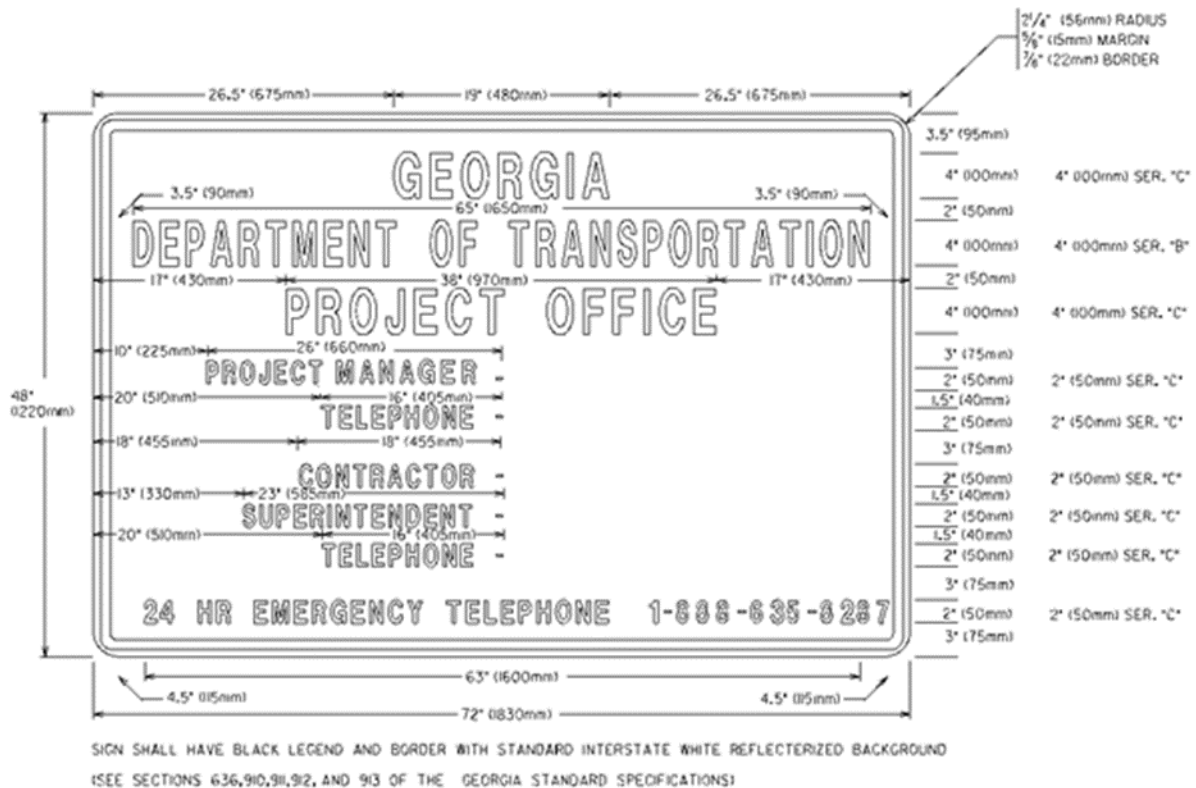
## Auxiliary Items Inspection

## Section 153: Field Engineer's Office

This work includes providing, furnishing, and maintaining field office buildings, when the Contract requires, before beginning construction and according to Special Provision 153 in each Contract.

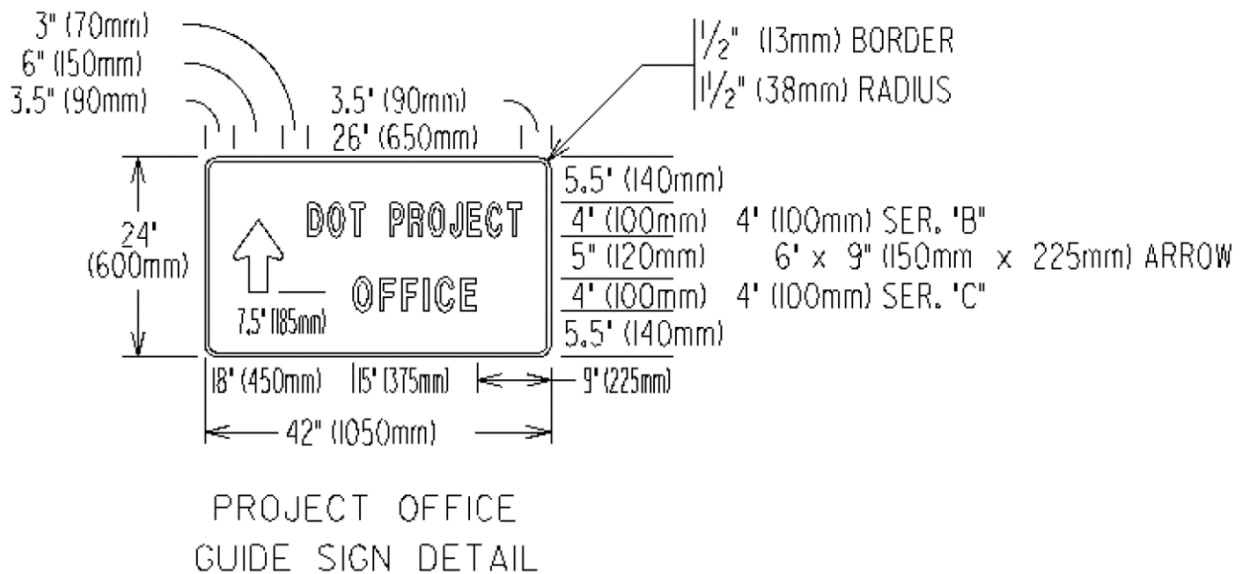
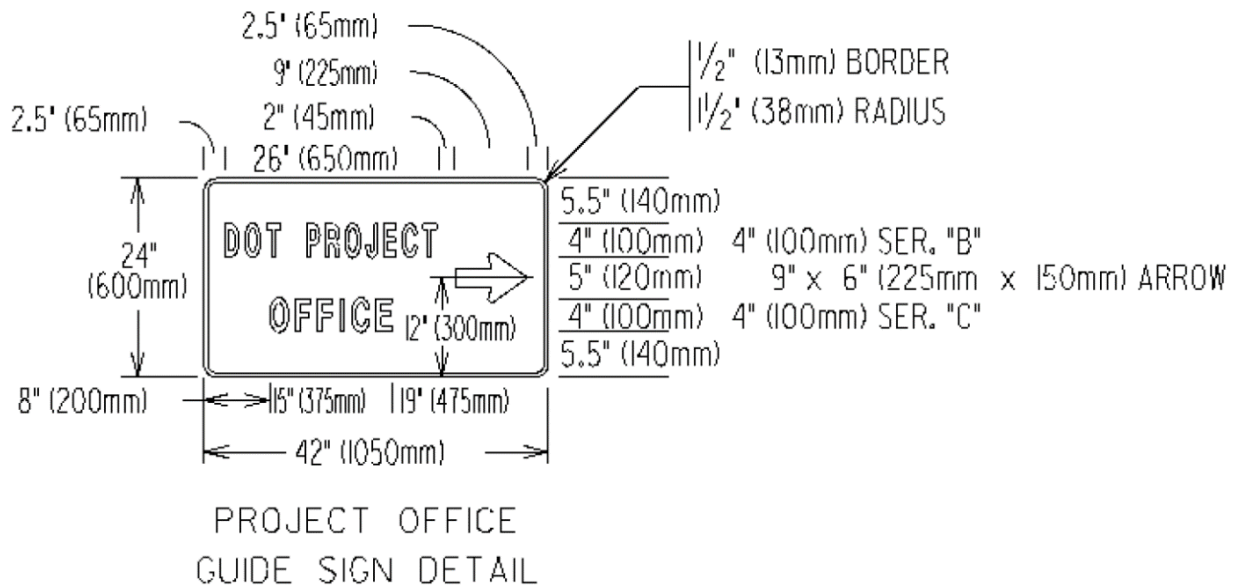
### *Fabrication*

- Install the following sign at the Department of Transportation Project Office:



- Install the sign so it is plainly visible from the Project roadway
- If the Project Office is not adjacent to the roadway, install a second sign as a guide sign and enough guide signs to direct the Travelling Public to the Project Office
- Submit signage plan to the Engineer for approval of this work
- Follow guide sign specifications as shown in the diagram below:





### ***Field Engineer's Office Specifications***

The field engineer's office shall have the following specifications:

- Office Building Type 1 and Type 2 field offices are obsolete
- Place within or near Project limits as directed by the Engineer, within is preferred
- Place within 1000 ft (300 m) of a power line if possible when electric current is required
- Whether the field office is placed within the project limits or not, all locations shall meet all Federal, State, and Local laws and environmental codes and regulations
- Field office request shall be submitted in writing to the Department for review prior to placement.



- The contractor shall be responsible for verifying that the location is not in an environmental sensitive area.
- The contractor is responsible for obtaining all permits
- Use a building, house, mobile office, or trailer, if approved
- Meet the requirements in the following table:

	<b>Constructed on Project</b>			<b>Commercially Produced</b>		
	<b>In Linear Feet (Meters)</b>			<b>In Linear Feet (Meters)</b>		
Building	Width	Length	Head-room	Width	Length	Head-room
Type 3	12 (3.66)	50 (15.24)	8 (2.44)	11.5 (3.51)	49.5 (15.09)	7 (2.13)

## Doors and Windows

The buildings will meet the following requirements for doors and windows:

- Ensure that each building has at least two standard height solid entrance doors with locks with 6 sets of entry keys.
- At least one of the doors shall have a covered entrance
- Each wall shall have at least one hinged, jalousies, or sliding window that is glazed, screened, or fitted with venetian blinds
- Each window shall measure at least 6.5 ft<sup>2</sup> (0.6 m<sup>2</sup>)
- *Window Requirements:* Each building shall have at least 8 windows

<b>Component</b>	<b>Building Requirement</b>
Roof	<ul style="list-style-type: none"><li>• Construct walls and roofs with studs and rafters measuring 2 in. × 4 in. (50 mm × 102 mm)</li><li>• Make roof watertight with a minimum slope of 1:12 in one direction away from door</li><li>• Ensure eaves are at least 12 in. (300 mm)</li></ul>
Walls	<ul style="list-style-type: none"><li>• Include in walls and ceilings insulated material at least 1¼ in. (32 mm) thick made of rock wool, fiberglass, or other nonflammable material</li><li>• Ensure material is in all inner wall and ceiling cavities</li><li>• Cover both sides with ¾-in. (10 mm) plywood (exterior grade on outside)</li><li>• Do not permit any open cracks or knotholes</li></ul>
Ceiling	<ul style="list-style-type: none"><li>• On all building types, cover inside roof rafters with ¾-in. (10 mm) plywood, if constructed on Project</li><li>• Use standard ceiling if the building is commercially produced</li></ul>
Floor	<ul style="list-style-type: none"><li>• Require floor to be a minimum of 12 in. (300 mm) above the ground on 2 in. × 6 in. wooden boards (38 mm × 152 mm)</li><li>• Allow timber with no open cracks or knotholes</li></ul>
Heater	<ul style="list-style-type: none"><li>• Provide an oil-fired, gas, or electric heater that can maintain inside minimum temperature of 72°F (22°C)</li><li>• Properly vent oil and gas units to the outside, provide adequate outside fuel storage, and connect with suitable feed lines</li><li>• Allow connection of gas units to a commercial gas main if available</li></ul>

Worktable	<ul style="list-style-type: none"> <li>• Provide a minimum of 4 standard-dimension desks</li> <li>• Provide a minimum of 1½-in. (28 mm) wood-grain laminated tops with 23-in. (575 mm) deep files and heavy-duty steel ball bearing drawers and locking center drawer</li> <li>• Provide 1 5-ft × 3-ft (1500 mm × 900 mm), adjustable from 0° to 45°, and 38-in. (950 mm) high drafting table</li> <li>• Provide two (2) 6 ft by 2.5 ft (1800mm by 750mm) standard height folding tables.</li> </ul>
Stools and Chairs	<ul style="list-style-type: none"> <li>• Provide 1 posture stool with supportive backrest, waterfall edge seat, and instant height level (26–30 in. or 650–750 mm)</li> <li>• Provide 4 (minimum) swivel chairs with arms and a 19 in X 19 in (475mm X 475mm) foam cushion and upholstered seat adjustable from 16 ½ in to 20 in (415mm to 500mm) high</li> <li>• Provide a minimum of 1½-in. (28 mm) wood-grain laminated tops with 23-in. (575 mm) deep files and heavy-duty steel ball bearing drawers and locking center drawer</li> <li>• Provide a minimum of six (6) fully braced stackable full 2 in (50mm) thick 16 in X 15 in (400mm by 375mm) seats with armrests and chrome frames</li> <li>• Provide six (6) standard folding metal chairs.</li> </ul>
Storage Shelves	<ul style="list-style-type: none"> <li>• Provide 6 linear ft (1800 linear mm) of storage shelves for books, etc.</li> <li>• If two 3-ft (900 mm) shelves are furnished, place at least 1 ft (300 mm) apart</li> </ul>
Utilities	<ul style="list-style-type: none"> <li>• Connect all including water, sewage, gas, electricity, and telephone service to sources before the Engineer's occupancy</li> </ul>
Toilet Facilities	<ul style="list-style-type: none"> <li>• Provide indoor toilet facilities that meet local sanitary codes</li> <li>• Provide consumable and non-consumable goods (toilet paper, paper towels, hand soap, bathroom cleaning supplies, toilet brush, plunger, etc.) for the life of the project.</li> <li>• Provide hot water to the bathroom sink</li> </ul>

#### Additional Type 3 Office Components

- *Locking File Cabinet:* Provide 2 four-drawer, letter size, steel, fireproof, lockable, and 2 keys
- *Air Conditioner:* Provide an air conditioning unit capable of cooling the building to maintain an inside temperature at least 20 °F (7 °C) cooler than the outside temperature.
- *Fire Extinguisher:* Equip each building with at least one approved fire extinguisher that meets the following requirements: Multipurpose dry chemical type extinguisher and Underwriters Laboratory rating 4A-40BC

- *Telephone:* Provide two voice lines, with rollover capabilities, connected to two handsets (located on either end of the office). Install and maintain these lines for the life of the Project. Provide telephone access to the Local Area Telephone Service (LATS) only for outgoing, credit card, collect and tollfree calls. Ensure that the telephones can receive incoming non-collect long distance calls.

Provide with the telephone with conference call capabilities; provide an automatic answering system that can give a greeting message, record incoming messages, and activate remotely.

- *Plan Racks:* Capable of holding one complete sets of Project plans
- *One Enclosed Closet:* At least 3 ft × 3 ft (900 mm × 900 mm) with lockable door and 2 keys
- *Potable Water:* Provide potable drinking water by a water cooler or bottled water
- *Garbage:* Provide 6 office trash cans. Provide dumpster, or exterior garbage cans, with pickup for a minimum of twice monthly
- *Outside Electrical Receptacle:* Provide a weather-proof, exterior 220-volt electrical receptacle attached to a power source
- *Chain Link Fence:* Field office compound to be fenced in for the sole use and purpose for the Department's field Engineer's Office. Provide a minimum of 600 feet (180 m) of 6 ft. (1.8 m) high chain link fence with an extension arm and barbed wire as specified in Section 643. Equip the fence with matching gates and meeting the requirements of Section 643 and consisting of a double 7 ft. (2.1 m) by 6 ft. (1.8 m) and a single 4 ft.(1.2 m) by 6 ft. (1.8 m) gate. Include a positive-type locking devices, padlock and a minimum of two keys for each gate. Ensure the fence encompasses the entire compound.
- *Security Light:* Provide two 150-watt high-pressure sodium, or LRD equivalent security lights with photoelectric controls (as directed by the Engineer)
- *Copy Machine:* Furnish and maintain for the life of the Project
- *Aggregate Surface:* Place and spread 200 tons (181 Mg) on the Office grounds and remove (and grass) upon Project completion or leave-in-place if property owner accepts the placed material as-is and provides an appropriate release waiver
- *Alarm System:* Includes SRN-2000 Enforced Bionic with NAPCO magnum Alert 850 – control box or Honeywell Vista-10P Master Control Panel with Honeywell 615RF keypad or equivalent
- *Concrete Cylinder Curing Box:* Furnish a Concrete Curing Box for any project that requires the placement of concrete. The curing box and its components shall be constructed of non-corroding materials and shall be capable of storing a minimum of 22 test cylinders, 6 inch by 12 inch (150 mm by 300 mm) stored vertically with the lid closed. Additional capacity may be required on large projects at the direction of the Engineer. The curing box shall be equipped with heating/cooling capabilities, automatic temperature control, and a maximum/minimum (high/low) temperature readout. The curing box shall be capable of meeting the moisture and temperature requirements of AASHTO T 23

### ***Installation timeframe***

The Field Engineer's Office location shall be submitted to the Engineer within 10 days of receiving the Notice to proceed. Upon approval of the location by the Department, the complete installation of the Field Engineer's Office shall occur within 60 days of the location approval

### ***Payment***

- The use of each office building eligible for payment is paid for at the Contract Unit Price bid. Payment is full compensation for the cost of the location, materials, design, construction, furnishings, maintenance, fuel, water, sewage disposal, garbage service, electricity, telephone service, movements within the Project, and movement to and from the Project. Failure to completely install or maintain the Field Engineer's Office may result in the Department withholding progress payments on the project.
- The cost of necessary transformers is included in the price bid for Type 3 office buildings. Any cost incurred for carrying electric current over 1000 ft (300 m) from a power line is paid for by Force Account
- Payment is for each and is paid 65% when the Field Office is ready for occupancy and 35% when it is no longer needed



***Related Specifications***

<b>Section</b>	<b>Title</b>
636	Highway Signs
643	Fence
910	Sign Fabrication
911	Sign Posts
912	Sign Blanks and Panels
913	Reflectorizing Materials

# Georgia Department of Transportation Construction Engineering Inspection Training

## Auxiliary Items Inspection

### Section 155: Insect Control

The Plant Pest Control Division of the US Department of Agriculture and the Georgia State Department of Agriculture restricts movement of certain items from areas infested with Japanese Beetles or Imported Fire Ants.

#### *Construction*

- Do not move the following from an infested area into a non-infested area without the approval of the Department of Agriculture Inspector in Charge:
  - Soil
  - Mulch
  - Sod
  - Plants with soil attached
  - Stump wood
  - Timber with soil attached
- Clean soil deposits from earth-moving equipment, including crawler-type tractors, before moving them from an infested area into a non-infested area
- Furnish scraping tools, brooms, water, and labor for cleaning equipment
- Unless otherwise noted, consider a Project an infested area



- Have earth-moving equipment inspected by the Department of Agriculture Inspector in Charge before moving from infested area
- Notify the Department of Agriculture Inspector in Charge in advance concerning movement of infested articles or equipment



- Obtain name, address, and telephone number of the Department of Agriculture Inspector in Charge from:

Georgia State Department of Agriculture  
Division of Entomology and Pesticides  
Agriculture Building  
State Capitol  
Atlanta, GA  
Phone: (404) 656-3641

USDA-APHIS  
Plant Protection and Quarantine  
1498 Klondike Road, Suite 200  
Conyers, GA 30094  
Phone: (770) 922-9894

# Georgia Department of Transportation Construction Engineering Inspection Training

## Auxiliary Items Inspection

### Section 157: Survey Aids

This work includes constructing, maintaining, and removing (when specified by the Engineer) survey aids required at the locations shown on the Plans or modified Plans, or at locations designated by the Engineer.

Survey aids may be required when line and distance control for excavation, embankment, and/or bridges require triangulation.

This work also includes disposing of survey aids, unless the Engineer directs to leave the aids in place.

#### *Materials*

- Do not require pre-inspection, sampling, or testing
- Replace, repair, or strengthen defective, worn, deteriorated, corroded, or unsatisfactory material
- Allow timber and piles to be untreated but require that they are peeled
- Consider timber of any commercial grade and species as acceptable
- For triangulation stations, ensure center pile for instrument mounting has a minimum diameter of 1 ft (300 mm) at distance of 4 ft (1.2 m) from the butt
- Require a minimum diameter of other piles in stations of 10 in. (250 mm)



- For survey targets, use marine-type plywood that is 0.75 in. (19 mm) thick
- Paint plywood with coats that meet the requirements of Federal Specifications
- Use galvanized sheet metal caps for pile heads, galvanized large-headed roofing nails to attach caps, and galvanized cable to wrap the pile clusters

### ***Construction***

- Identify possible locations of base lines, triangulation stations, and survey targets as shown on the plans
- Base actual and final locations of survey aids on the Contractor's own procedures and equipment methods
- The Contractor and the Engineer must agree on the most effective means to control the line and distance during construction

- The Engineer places instrument mountings and performs field checks and office calculations necessary to provide locations of survey points
  - Drive pile clusters into underlying firm material to provide instrument mountings and drive into firm material
- The Engineer can determine how high to construct survey aids
  - Construct items above the extreme high-tide mark

Engineer may require triangulation stations to be built to a higher elevation.

#### ***Contractor Warranty and Maintenance***

- Promptly replace, repair, or strengthen defective, unduly worn, corroded, deteriorated, or otherwise unsatisfactory material at the Engineer's request
- Maintain survey aids to the Engineer's satisfaction to ensure they are safe, have longevity, and perform accurately

#### ***Payment***

- Survey aids are paid at the Contract Unit Price per unit of measurement, complete in place, and when maintained and removed as directed

# Georgia Department of Transportation Construction Engineering Inspection Training

## Auxiliary Items Inspection

### Section 158: Training Program

Contractor's Employment Program includes on-the-job training aimed at fully qualifying trainees in the trade or job classification involved

#### *General*

- The Contractor will submit an acceptable training program to the Department for review and approval within 30 days after the Notice to Proceed is issued
- If the work is subcontracted, the Contractor will determine how many trainees the Subcontractor will train. The Contractor has primary responsibility for meeting training requirements and should provide training for the following: 1) construction crafts, 2) laborers, 3) clerks and 4) secretaries.

#### *Preparation*

- Provide each trainee with a copy of the program and certification showing type and length of training satisfactorily completed
- The State will approve or accept the training program before beginning work

#### *Construction*

- An employee who completes a training course or is employed as a journeyman cannot receive training in that area of expertise
- Include questions in the employee application or by other means to disclose trainee's status
- Off-site training is permissible

#### *Quality Acceptance*

- The selected training program approved by the Department and the Federal Highway Administration establishes the minimum length and type of training for each classification
- Acceptable apprenticeship programs include:
  - Programs registered with the US Department of Labor
  - Programs registered with the Bureau of Apprenticeship and Training
  - Programs registered with a State apprenticeship agency recognized by the Bureau
  - Training programs approved but not necessarily sponsored by the US Department of Labor, Manpower Administration, Bureau of Apprenticeship and Training



## References

[myconstructionphotos.smugmug.com](http://myconstructionphotos.smugmug.com)  
<http://www.jamelioremamaison.fr>  
[www.made-in-china.com](http://www.made-in-china.com)  
[www.nl-test.com](http://www.nl-test.com)  
[www.msisb.com](http://www.msisb.com)  
[www.archithings.com](http://www.archithings.com)  
[www.walsh-engineering.com](http://www.walsh-engineering.com)  
[www.govloop.com](http://www.govloop.com)